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NEVADA COOPERATIVE SNOW SURVEYS

Part II. Humboldt River Basin,
Eastern and Southern
Nevada, and Nevada
National Wildlife Refuges.

Seasonal Snow Survey and Kindred Data,
March 1, 1943

Issued in cooperation with the Nevada
Agricultural Experiment Station, United States
Division of Irrigation of the Soil Conservation
Service, Forest Service, Bureau of Reclamation,
Weather Bureau, Geological Survey, Fish and Wild-
life Service, Humboldt River Water Users, Nevada
State Engineer, and Elko-Lamoille Power Company.

Nevada Agricultural Experiment Station

Reno, Nevada

MARCH 1, 1943

-PROGRESS-

The experience of 1941, 1942, and earlier years has demonstrated that a forecast for the flow of Great Basin streams cannot be attempted until the April 1 snow surveys have been made since the snowfall or lack thereof during the month of March makes a large difference in the expected yield of the watershed. The forecast has not been released until about April 10 for many years although the principal survey was made on March 1. Since there are some engineers and others that are interested in the data as soon as the surveys are made, it was deemed advisable to issue a bulletin giving this information as soon after March 1 as possible.

The present season, owing to the complete revision of the normals for runoff of the Humboldt River at Palisade and the consequent revision of all snow-survey normals in the Humboldt Basin, the publication of the March 1 data must be somewhat delayed. It is obvious, however, that water supplies will be abundant probably throughout the season.

In this bulletin, no attempt is made to give a forecast of the expected runoff of the streams. The data are published as received and computed and comparative figures of the water content on the courses for the past several years are given for the sake of those who desire to make their own study of the snow storage situation. There is also a table given which shows the increase or decrease of the snow water-content on the key courses during the month of March as shown by the March 1 and April 1 surveys. This table demonstrates the uncertainty of the amount of the final snowpack as shown by March 1 measurements.

The series of snow courses now organized has been supplemented by an additional high-level course in Baker Creek Basin in Eastern Nevada.

The regular forecast of stream flow together with detailed data will be issued, as in the past, about April 10th.

Prof. H. P. Boardman has computed all normals both of snow cover and streamflow and will prepare the tables of runoff of the tributaries of the Upper Humboldt River for the water year of 1941-1942 as he did for 1940-1941.

Page 2

1890

The first of the year, 1890, was a very dry one. The weather was very hot and the ground was very dry. The crops were very poor and the people were very poor. The first of the year, 1890, was a very dry one. The weather was very hot and the ground was very dry. The crops were very poor and the people were very poor.

The second of the year, 1890, was a very wet one. The weather was very cold and the ground was very wet. The crops were very good and the people were very good. The second of the year, 1890, was a very wet one. The weather was very cold and the ground was very wet. The crops were very good and the people were very good.

The third of the year, 1890, was a very hot one. The weather was very hot and the ground was very hot. The crops were very poor and the people were very poor. The third of the year, 1890, was a very hot one. The weather was very hot and the ground was very hot. The crops were very poor and the people were very poor.

The fourth of the year, 1890, was a very cold one. The weather was very cold and the ground was very cold. The crops were very good and the people were very good. The fourth of the year, 1890, was a very cold one. The weather was very cold and the ground was very cold. The crops were very good and the people were very good.

The fifth of the year, 1890, was a very dry one. The weather was very hot and the ground was very dry. The crops were very poor and the people were very poor. The fifth of the year, 1890, was a very dry one. The weather was very hot and the ground was very dry. The crops were very poor and the people were very poor.

The sixth of the year, 1890, was a very wet one. The weather was very cold and the ground was very wet. The crops were very good and the people were very good. The sixth of the year, 1890, was a very wet one. The weather was very cold and the ground was very wet. The crops were very good and the people were very good.

MARCH 1 SNOW SURVEY DATA

1. UPPER HUMBOLDT BASIN

Temperature departure Nov.-Feb. Elko (5,077 ft.) +2.6°F
Mean temperature above freezing -0.8°F

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent	Normal water equivalent March 1	Percentage of March 1: normal	Seasonal precip. percentage of normal at U.S.W.B. stations Nov.-Feb.
<u>Northern Feeders</u>							
<u>Marys River</u>							
Bear Creek 8,100	Feb. 25	60.3	37.3	22.5	20.6	109.2)	Jarbridge-Mala
Fox Creek 6,900	Feb. 25	31.3	30.7	9.6	11.1	86.5)	Vista (6,100-
Marys River 8,000	Feb. 23	70.2	34.2	24.0	20.3	118.2)	5,585 ft.)
<u>Marys River-North Fork:</u>							
Big Bend 6,800	Mar. 2	43.3	37.6	16.3	12.1	134.7)	8.23 in.
Gold Creek R.S.6,600	Mar. 2	30.2	36.1	10.90	8.6	126.7)	
<u>North Fork</u>							
Jack Creek 7,800	Mar. 4	32.8	37.5	12.3	11.6	106.0)	North Fork-Tusca-
Jack Creek 7,000	Mar. 3	10.5	31.4	3.3	7.3	45.2)	pora-Owyhee (6,500-
Rodeo Flat 7,000	Mar. 5	30.9	40.5	12.5	14.3	87.4)	5,400 ft.)
Fry Canyon 6,800	Mar. 5	30.8	34.7	10.7	13.6	78.7)	
Tremewan Rch. 5,600	Feb. 27	7.7	29.9	2.3	4.0	57.5	152.3
<u>Susie-Maggio Creeks</u>							
Taylor Canyon 5,200	Mar. 6	13.4	32.8	4.4	7.7	57.1	
AVERAGE OF NORTHERN FEEDERS							
					Higher Levels	104.9	152.3
					Lower Levels	57.5	

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Date	Description	Debit	Credit	Balance
1890	Jan 1			1000
	Jan 2	100		900
	Jan 3		200	1100
	Jan 4	50		1050
	Jan 5		150	1200
	Jan 6	200		1000
	Jan 7		300	1300
	Jan 8	100		1200
	Jan 9		100	1300
	Jan 10	50		1250
	Jan 11		250	1500
	Jan 12	100		1400
	Jan 13		100	1500
	Jan 14	50		1450
	Jan 15		50	1500
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	Jan 17		100	1500
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	Jun 16		100	1500
	Jun 17	50		1450
	Jun 18		50	1500
	Jun 19	100		1400
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	Jun 22		50	1500
	Jun 23	100		1400
	Jun 24		100	1500
	Jun 25	50		1450
	Jun 26		50	1500
	Jun 27	100		1400
	Jun 28		100	1500
	Jun 29	50		1450
	Jun 30		50	1500
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	Jul 2		100	1500
	Jul 3	50		1450
	Jul 4		50	1500
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	Jul 9	100		1400
	Jul 10		100	1500
	Jul 11	50		1450
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	Jul 13	100		1400
	Jul 14		100	1500
	Jul 15	50		1450
	Jul 16		50	1500
	Jul 17	100		1400
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	Jul 19	50		1450
	Jul 20		50	1500
	Jul 21	100		1400
	Jul 22		100	1500
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	Jul 28		50	1500
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	Aug 2	100		1400
	Aug 3		100	1500
	Aug 4	50		1450
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	Aug 12	50		1450
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	Aug 18	100		1400
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	Aug 29		50	1500
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	Sep 8		100	1500
	Sep 9	50		1450
	Sep 10		50	1500
	Sep 11	100		1400
	Sep 12		100	1500
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	Oct 9		100	1500
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	Oct 11		50	1500
	Oct 12	100		1400
	Oct 13		100	1500
	Oct 14	50		1450
	Oct 15		50	1500
	Oct 16	100		1400
	Oct 17		100	1500
	Oct 18	50		1450
	Oct 19		50	1500
	Oct 20	100		1400
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	Oct 22	50		1450
	Oct 23		50	1500
	Oct 24	100		1400
	Oct 25		100	1500
	Oct 26	50		1450
	Oct 27		50	1500
	Oct 28	100		1400
	Oct 29		100	1500
	Oct 30	50		1450
	Oct 31		50	1500
	Nov 1	100		1

MARCH 1 SNOW SURVEY DATA

1. UPPER HUMBOLDT BASIN (Cont.)

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent	Normal water equivalent	Percentage of March 1 normal	Seasonal percentage of normal at U.S. W.B. stations Nov.- Feb.
Southern Feeders							
Trout-Starr-Secret							
Creeks							
Trout Creek	Mar. 7	70.1	34.4	24.1	24.9	96.8)	Arthur-Clover Valley wells
Trout Creek	Mar. 7	14.8	32.4	4.8	8.4	57.1)	(6,500-5,633 ft.)
Dorsey Basin	Mar. 1	46.6	21.7	10.1	14.7	70.1	
Dry Creek	Mar. 1	13.6	35.3	4.8	8.3	68.7)	154.8
Ryan Ranch	Feb. 28	3.3	24.2	0.8	3.0	57.8)	
Lamoille-Rabbit							
Creeks							
Lamoille Canyon	Mar. 2	81.8	38.6	31.6)	27.4	110.6)	Lamoille-Elko
Lamoille Canyon	Mar. 2	78.3	37.2	29.1)			(6,290-5,077 ft.)
Lamoille Canyon	Mar. 2	61.4	34.2	21.0			
Lamoille Canyon	Mar. 2	44.2	31.0	13.7	15.0	91.3)	145.6
Lamoille Canyon	Mar. 1	38.3	31.3	12.0	12.8	93.8)	
Lamoille Canyon	Mar. 1	33.5	34.9	11.7	12.2	95.9)	

+ Cross course

MARCH 1 SNOW SURVEY DATA

1. UPPER HUMBOLDT BASIN (Continued)

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water equivalent March 1	Percentage of March 1 normal	Seasonal percentage of normal at U.S.W.B. stations Nov.-Feb.
Southern Feeders (Cont.)							
South Fork- Ruby Lake							
Corral Canyon	Feb. 28	55.1	28.7	15.8	14.5	109.0)	Hylton-Ruby Lake
Green Mountain	Mar. 1	38.6	31.6	12.2	17.3	70.5)	(7,081-6,200 ft.)
Harrison Pass							
No. 2	Mar. 2	12.4	21.0	2.6)		70.1)	105.6
Harrison Pass							Ruby Lake 7.07 in.
No. 1	Mar. 2	10.8	21.3	2.34)	7.8	30.8)	
Hager Canyon	Mar. 9	52.3	36.5	19.1			
Cave Creek	Mar. 9	38.3	38.1	14.6			
AVERAGE OF SOUTHERN FEEDERS						78.0*	122.9*

*The average for the Southern Feeders is computed by weighting the three groups of stations representing South Fork, Lamoille Creek, and Starr Creek on the basis of 2, 1, and 1/2 representing their relative contributions to the flow of the main Humboldt.

MARCH 1 SNOW SURVEY DATA

11. LOWER HUMBOLDT BASIN

Temperature departure Nov.-Feb. Winnemucca +3.5°F

Mean temperature above freezing +4.2°F

Elevation : feet	Date :	Snow depth : inches	Density : percent	Water : equivalent : inches	Normal : water : equivalent : Mar. 1 :	Percentage : of Mar. 1 : normal :	Precipitation : (U.S.W.B. per- centage Nov- Feb.)
Rock Creek-Little Humboldt Midas	7,000 : Mar. 6 :	15.4 :	33.8 :	5.2 :	:	:	:
Little Humboldt Basin	:	:	:	:	:	:	:
Lamance Creek	7,000 : Feb. 24 :	37.7 :	36.1 :	13.6 :	12.6 :	107.9 :	Paradise-
Granite Peak	8,600 : Mar. 2 :	49.0 :	38.6 :	18.9 :	13.6 :	139.0 :	Orovada (4,650-
Martin Creek R.S.	7,000 : Mar. 1 :	25.6 :	37.1 :	9.5 :	7.9 :	120.2 :	4,300 ft.)
	:	:	:	:	:	122.1 :	:
Upper Buckskin Mt.	8,200 : Feb. 28 :	36.5 :	40.8 :	14.9 :	10.3 :	144.7 :	:
Lower Buckskin Mt.	6,800 : Feb. 28 :	25.7 :	36.2 :	9.3 :	9.4 :	98.9 :	:
	:	:	:	:	:	:	:
AVERAGE LITTLE HUMBOLDT BASIN	:	:	:	:	:	122.1 :	187.4
Reese River Basin	:	:	:	:	:	:	:
Big Creek	:	4.8 :	21.0 :	1.0 :	:	:	:
Cabin Course	:	T :	:	T :	:	:	Austin
Big Creek Camp Ground	:	:	:	:	:	:	(6,594 ft.)
Upper Big Creek	8,000 : Feb. 25 :	13.1 :	26.0 :	3.4 :	:	:	91.8
Reese River	:	:	:	:	:	:	:
Lower Corral	7,500 : Feb. 26 :	6.8 :	39.7 :	2.7 :	:	:	:
Upper Corral	8,500 : Feb. 26 :	16.9 :	32.0 :	5.4 :	:	:	:

MARCH 1 SNOW SURVEY DATA

EASTERN NEVADA

Temperature Departure Nov.-Feb. Ely (6,257 ft.) OF
Mean temp above freezing -1.9°F

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water	Percentage of Mar. 1	Precipitation (U.S.W.B.)
Steptoe Valley					Equivalent:	normal	Percentage Nov.-
					March 1		Feb.
Murray Summit	7,500				inches		Ely (6,257)
		15.0	33.3	5.0			2.17 in.
Baker Creek							Lehman Caves
Baker Creek No. 3	9,250	48.0	27.1	13.0			Mat. Mon.
Baker Creek No. 2	8,900	49.3	26.0	12.8			(7,200 ft.)
Baker Creek No. 1	7,950	20.4	29.4	6.0			3.71 in.

SOUTHERN NEVADA

		Temperature Departure Nov.-Feb. Las Vegas A.P. (1,876 ft.) +3.9°F	
		Mean temp. above freezing +18.1°F	
Charleston Mt.			
Kyle Canyon	8,200	Feb. 28	47.6 : 33.0 : 15.7
Kyle Canyon	7,400		
Rainbow Canyon	7,800	Feb. 28	50.7 : 32.9 : 16.7
Lee Canyon	9,000	Mar. 5	54.0 : 32.0 : 17.4
Lee Canyon	8,300	Mar. 4	43.5 : 32.0 : 13.9

WILDLIFE REFUGES

Sheldon National Antelope Refuge (Northern Washoe County)
Temperature Departure Nov.-Feb. Cedarville (4,675 ft.) +0.2°F
Mean temp. above freezing +2.1°F

Sheldon Antelope
Refuge (6,500 ft.)
7.79 in.
Cedarville (4,675
ft.)
1.78

Peterson Canyon and
Bald Mountain Creek
Mahogany Mountain
Virgin

: : : : :
: Mar. 1 : 21.0 : 36.7 : 7.7 :
: Mar. 2 : 1.3 : 54.0 : 0.7 :

Ruby Lake National Wildlife Refuge (Southern Elko County)

Temperature departure Nov.-Feb. Elko (5,077 ft.) +2.6° F

Mean temp. above freezing -0.8°F

Elevation feet	Date	Snow depth inches	Density percent	Water equi- valent Mar. 1 inches	Normal water equivalent	Percentage of Mar. 1 normal	Precipitation (U.S.W.B.) Percentage Nov.- Feb.
Hager Canyon 8,500	Mar. 9	52.3	36.5	19.1			
Cave Creek 7,000	Mar. 9	38.3	38.1	14.6			:(Arthur 6,500 ft.) normal 7.38 in.
							86.2
							Ruby Lake (6,200 ft.) 7.07 in.

Comparison of March 1 Snow-Survey Data
1936-1943
Water Content only

Courses	Elevation feet	1943	1942	1941	1940	1939	1938	1937	1936
1. Upper Humboldt Basin									
Northern Feeders									
Marys River									
Bear Creek	8,100	22.5	18.3	14.2	15.3	16.6	16.3	15.6	22.5
Fox Creek	6,900	9.6	9.8	7.6	5.7	8.7	7.2	9.1	13.6
Marys River	8,000	24.0	17.7		14.7	16.5	14.2	14.9	25.4
Marys River-North Fork									
Big Bend	6,800	16.3	10.2	9.9	6.4	7.2	8.2	9.4	16.4
Gold Creek N.S.	6,600	10.9	8.1	6.2	4.7	4.5	4.8	7.8	11.2
North Fork									
Jack Creek	7,800	12.3	11.5	9.4	8.9	12.9	4.5	7.3	15.4
Jack Creek	7,000	3.3	6.7	4.2	1.3	7.9	2.4	4.4	8.2
Rodeo Flat	7,000	12.5	11.4	10.5	7.5	11.0	6.5	8.6	18.8
Fry Canyon	6,800	10.7	10.5	9.2	6.5	10.0	7.2	10.0	18.1
Tremewan Ranch	5,600	2.3	4.1	3.2	0	2.4	0	4.9	5.5
Susie-Maggie Creeks									
Taylor Canyon	5,200	4.4	8.5	8.3	3.0	5.6	4.9	7.8	10.3
Southern Feeders									
Trout-Starr-Secret Creeks									
Trout Creek	8,500	24.1	17.5	24.9	19.7	19.6	16.1	22.7	28.8
Trout Creek	6,900	4.8	9.0	6.5	7.4	5.0	6.5	8.6	8.6
Dorsey Basin	8,100	10.1	14.0	9.6	11.3	8.1	6.1	10.0	19.8
Dry Creek	6,500	4.8	7.6	6.6	3.2	3.6	5.8	9.6	11.0
Ryan Ranch	5,775	0.8	4.3	0.4	0.5	1.6	1.5	4.8	3.5
Lamoille-Rabbit Creeks									
Lamoille Canyon	9,000	31.6	23.8	22.7	20.4	23.4	19.0	20.3	36.5
Lamoille Canyon	9,000	29.1	23.7	21.3	19.4	22.7	16.3	20.3	34.2
Lamoille Canyon	8,500	21.0	18.5	15.3	14.7				
Lamoille Canyon	8,100	13.7	13.3	11.2	11.8	12.6	10.7	12.9	17.4
Lamoille Canyon	7,600	12.0	12.7	9.4	9.1	9.4	9.2	10.5	14.1
Lamoille Canyon	7,400	11.7	12.4	10.2	7.4	8.6	8.9	10.3	14.3
South Fork-Ruby Lake									
Corral Canyon	8,500	15.8	15.8	13.2	14.4	16.1	11.3	8.1	16.5
Green Mountain	8,000	12.2	14.1	13.7	13.1	15.3	11.1	11.8	20.6
Harrison Pass No.2	7,400	2.6	7.7	6.0	4.9	5.3	5.5	5.6	8.0
Harrison Pass No.1	6,600	2.3	6.5	5.4	4.6	5.1	4.4	5.2	7.9
Hagar Canyon	8,500	19.1	21.0	14.8	19.3				
Cave Creek	7,000	14.6	16.2	0	12.4				

+ Cross Course

Comparison of March 1 Snow Survey Data
1936-1943 (Continued)

Courses	Elevation feet	1943	1942	1941	1940	1939	1938	1937	1936
2. Lower Humboldt Basin									
Rock Creek-Little Humboldt River									
Nidas	7,000	5.2	9.2	7.3	5.2				
Little Humboldt Basin									
Lamance Creek	7,000	13.6	10.4	11.9	9.9	8.7	6.9	11.0	19.9
Granite Peak	8,600	13.9	15.7	15.7	15.0	12.8	13.5	7.9	12.8
Martin Creek R.S.	7,000	9.5	8.3	7.8	6.8	5.8	8.1	6.0	7.5
Upper Buckskin Mt.	8,200	14.9	11.2	13.4	10.8	8.0	7.2	6.8	13.3
Lower Buckskin Mt.	6,800	9.3	7.6	8.4	5.8	6.7	8.1	8.3	11.1
Reese River Basin									
Big Creek									
Upper Big Creek	8,000	3.4	6.6						
Cabin Course		1.0	4.9						
Camp Ground		T	4.7						
Reese River									
Upper Corral	8,500	5.4	5.0						
Lower Corral	7,500	2.7	3.0						
3. Eastern Nevada									
Steptoe Valley									
Murray Summit	7,500	5.0	3.7						
Baker Creek									
Baker Creek No.3	9,250	13.0							
Baker Creek No.2	8,950	12.8	15.6						
Baker Creek No.1	7,950	6.0	5.3						
4. Southern Nevada									
Charleston Mt.									
Kyle Canyon	8,200	15.7	8.8						
Kyle Canyon	7,400		5.4						
Rainbow Canyon	7,800	16.7	10.5						
Lee Canyon	9,000	17.4	9.9						
Lee Canyon	8,300	13.9	7.8						
5. Nevada Wildlife Refuge									
Sheldon Antelope Refuge									
Bald Mountain									
Peterson Canyon and Bald Creek									
Mahogany Mountain	6,720	7.7	6.2	5.9					
Virgin	5,680	0.7	3.0	5.3					
Ruby Lake Wildlife Refuge									
Hagar Canyon	8,500	19.1	21.0	14.8					
Cave Creek	7,000	14.6	16.2	0					

WINTER PRECIPITATION
(U. S. Weather Bureau)

1. Upper Humboldt Basin

Northern Feeders Stations	Marys River		North Fork		Maggie- Susie Creeks
	Jarbridge:	Mala Vista:	North Fork:	Owyhee:	Tuscarora
Elevation (Ft. alt.)	(6,100)	(5,585)	(6,500)	(5,400)	(6,400)
November	4.46	1.58	2.62	1.84	3.22
December	0.98	1.76	1.95	1.56	2.88
January	3.68	1.95	2.59	1.40	3.53
February	1.25	0.80	0.80	0.82	0.91
Total	10.37	6.09	7.96	5.62	10.51
Weather Bureau Normal (Nov.-Feb.)			4.64	5.10	6.02
Seasonal Percentage of Normal			171.6	110.2	175.1
Area Percentage				152.3	
Northern Feeders			152.3		

Southern Feeders

Stations	Trout-Starr-Secret Creeks:		Lamoille-Rabbit:		South Fork	
	Wells:	Clover Valley:	Arthur:	Creeks	Ruby	
Elevation (Ft. alt.)	(5,633)	(5,800)	(6,500)	(6,290)	(5,077)	(7,081)(6,200)
November	2.72		1.50	3.14	2.77	1.75 1.96
December	2.33		1.10	1.61	1.71	1.25 3.03
January	2.84		2.54	1.82	1.68	0.67 1.01
February	1.01		1.22	2.02	0.65	1.55 1.07
Total	8.93		6.36	8.59	6.81	5.22 7.07
Normal (Nov.-Feb.)	4.00	6.21	7.38	6.25	4.43	5.04
Seasonal Percentage of Normal	223.3	—	86.2	137.4	153.7	103.6 —
Area Percentage		154.8			145.6	103.6
Southern Feeders				122.9*		

*See Footnote p. 4

THE UNIVERSITY OF CHICAGO
(CHICAGO, ILLINOIS 60637)

DEPARTMENT OF CHEMISTRY

RECEIVED
DATE: 10/10/67
FROM: J. H. D. ELLIS
SUBJECT: 1,2-DICHLOROBENZENE

$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0

10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0

RECEIVED
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$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$	$(\text{CH}_2\text{Cl})_2$
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0

10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0
10.0	10.0	10.0	10.0	10.0	10.0

WINTER PRECIPITATION

(U. S. Weather Bureau)

2. Lower Humboldt Basin

Stations	Paradise Valley	Orovada	Austin	Battle Mountain	Winne- mucca	Rye Patch Dam	Love- lock
Elevation (Ft. alt.)	(4,650)	(4,300)	(6,594)	(4,513)	(4,287)	(4,161)	(3,977)
November	2.80	1.98	1.41	1.15	1.93	0.58	0.35
December	1.74	2.41	0.66	1.37	1.81	1.06	1.16
January	3.07	1.61	0.36	1.43	1.27	2.53	2.06
February	<u>1.10</u>	<u>0.64</u>	<u>1.50</u>	<u>0.91</u>	<u>0.60</u>	<u>0.56</u>	<u>0.56</u>
Total	3.71	6.64	3.93	4.36	6.21	4.73	4.13
Normal (Nov.-Feb.)	4.10	4.09	4.28	2.54	3.70		1.71
Seasonal Percentage of normal	212.4	162.3	91.8	191.3	167.8		241.5
Area Percentage	187.4		91.8	179.6			241.5

3. Eastern Nevada

4. Southern Nevada

5. Wildlife Refuge

Station (Ft. alt.)	Ely (6,257)	Lehman Caves Nat. Mon.	Charleston R.S. (7,165)	Ruby Lake (6,200)	Sheldon (6,500)
Nov.	0.61	0.76	—	1.96	2.27
Dec.	0.06	0.28	—	3.03	1.81
Jan.	1.00	1.26	—	1.01	2.94
Feb.	<u>0.50</u>	<u>1.41</u>	—	<u>1.07</u>	<u>0.77</u>
Total	2.17	3.71		7.07	7.79
Normal (Nov.-Feb.)	—	—	—	—	—
Seasonal Percentage of normal			(Las Vegas 62.8)	(Arthur 86.2)	(Cedar- ville 153.8)

WINTER RUNOFF 1941-1942 (Nov.-Feb.)
(acrefeet)

Humboldt River at Palisade

	1940-1941	1941-1942	1942-1943	Normal*
Nov.	1,570	10,997	5,530	4,600
Dec.	2,200	16,459	13,400	5,400
Jan.	3,840	16,550	35,880	6,600
Feb.	13,346	20,269	70,520	12,200
Total	21,036	64,275	125,330	28,800
	(73.0%)	(223.2%)	(435.2%)	

Martin Creek at U. S. Gaging Point

	1940-1941	1941-1942	1942-1943	Normal
	510	400 approx.	682	
	550	"	1,140	
	555	"	7,010	
	2,650	"	6,090	
	4,265	2,300	14,922	3,680
	(115.9%)	(62.5%)	(405.5%)	

*37-year normal (adopted 1942)

WINTER TEMPERATURE DEPARTURE FROM NORMAL °F.

	1940-1941	1941-1942	1942-1943	Winnemucca 1941-1942	1942-1943
Nov.	-2.6	0.0	-1.1	+6.8	+1.4
Dec.	+4.0	+4.7	+6.0	+5.0	+3.6
Jan.	0.0	+0.8	+5.4	-2.8	+3.4
Feb.	+4.0	-5.5	+0.2	-1.9	+5.7
Average	+1.4	0.0	+2.6	+1.8	+3.5

MEAN TEMPERATURE DURING WINTER ABOVE 32°F (freezing)

	1940-1941	1941-1942	1942-1943	Winnemucca 1941-1942	1942-1943
Nov.	+0.3	+2.8	+3.0	+9.3	+7.8
Dec.	0	0	-0.2	+5.0	+1.6
Jan.	0	+3.1	-3.6	+3.7	0.0
Feb.	+0.9	+3.2	-2.2	+9.2	+7.2
Average	+0.3	+2.3	-0.8	+6.4	+4.2

WELL MEASUREMENTS

March 1

Upper Humboldt Valley
(Average of 7 wells)*

To water level:

1941.....12.90 ft.
1942..... 9.19 ft.
1943.....9.97 ft.

Lamoille Valley
(Average of 5 wells)

To water level:

1935.....5.03 ft.
1936.....3.72 ft.
1937.....3.57 ft.
1938.....4.50 ft.
1939.....3.92 ft.
1940.....4.50 ft.
1941.....5.70 ft.
1942.....3.80 ft.
1943.....3.40 ft.

*Approximately April 1

FORECAST

Until a further analysis can be made of the snow cover April 1 and the precipitation and runoff during April, only a general forecast of trends in the seasonal flow for March-July will be attempted.

The snow cover March 1 was:

Upper Humboldt Basin

Northern Feeders.....	104.9 percent	(Lower levels 57.5)
Southern Feeders.....	78.0	" (Lower levels 26.7)
Lamoille Creek.....	97.9	"
South Fork.....	70.1	"
Runoff at Palisade.....	130.0	"

Lower Humboldt Basin

Little Humboldt Basin.....	122.1	"
Quinn River.....	125.7	
Reese River (No normal U.S.W.B).....	91.8	

The winter precipitation as measured by the U. S. Weather Bureau shows the same trends as the snow cover in percentage of normal but is far higher, being 152.3, 122.9, and 187.4 for the Northern and Southern Feeders of the Upper Humboldt and Little Humboldt areas respectively. In the Reese River basin the snow cover and precipitation seem to be closely similar, the snow cover being only slightly greater than a year ago while the precipitation is 20 percent lower.

The snow at lower elevations is scant. At Tremewan Ranch (5,600 ft.) on the Northern Feeders it is 57.1 percent and at Ryan Ranch (5,775 ft.) on the Southern Feeders only 26.7 percent.

The relative deficiency in snow at elevations of 7,000 feet and lower is naturally due to rain and melting prevalent during the winter and should preclude further floods, which have had unprecedented crests and have been destructive to bridges and stream gages.

The wells in Humboldt and Lamoille Valleys in March were higher than for previous years of record, except 1942 in the former. The winter runoff of the Humboldt (Nov.-Feb.) at Palisade was 125,000 acrefeet or more than half of the summer normal. This is unprecedented in the flow of the river and far above any previous record such as 1907-08 and 1913-14. The percentages of normal were: November 120.2, December 248.1, January 543.6, and February 578.0.

The high water table and copious rains will reduce the usual absorption from melting snow with consequent increase in the streams. Furthermore, the high winter runoff has primed the stream bed and already filled the Pit-Taylor and Rye Patch Reservoirs beyond capacity.

There is therefore abundant reason to expect that the percentage of the snow cover will be realized in the flow of the streams especially since the revised normal is 40,000 acre feet or 16 percent lower than the original.

It is even probable that the ground water may increase the flow of the main Humboldt and low-level streams by 40 percent or more as apparently happened last season.

Lack of rain during runoff may, however, offset the effect of the water table or excess rain may build it up. The loss of low-level snow may likewise reduce the early flow though it will still be copious, for despite a deficiency of 57 percent in the March precipitation at Elko, the flow of the Humboldt has already attained 103,600 acre feet (318 percent of the March normal) or nearly one-half of the total normal summer flow.

The winter precipitation in the Little Humboldt- Quinn River area was 187.4 percent of normal but the snow cover was only 122.1 percent. At the higher elevations, however, the snow cover was 140 to 145 percent of normal and the winter runoff was 405.5%.

In the Reese River Basin, the winter precipitation was 91.8 percent as compared with 111.9 percent last year. The snow cover, however, is only 58.5 percent of last season's.

In Eastern Nevada in Steptoe Valley the snow cover is 35 percent better but in Baker Creek Basin is 10 percent poorer this season than last.

In Southern Nevada in the Charleston Range the snow cover this season is 72 percent better than last but no precipitation from records are available from the adjacent ranger station. The records/ the low-level stations at Las Vegas or Boulder City bear too little relationship to the snowfall in the mountains to be used for comparison.

In the two Wildlife Refuges, the snow is approximately 90 percent of that of last season--but the winter precipitation is 150 percent of normal.

The Floods of 1943

In the last week of January the Humboldt River at Palisade discharged a maximum of 2,146 cubic feet per second provided mainly from the Northern Feeders. The North Fork washed away in the flood at this time the automatic stream recorder as well as the bridge

on Highway 40 and staff gages were lost on Susie and Mary Creeks. On Martin Creek and at Chimney Dam site on the Little Humboldt the recorders were submerged and the channel eroded.

Again, during the last week of February the Humboldt at Palisade rose to an estimated 5,420 second feet and during the first half of March has flowed from 1,510 to 3,038 second feet.

The U. S. Geological Survey and Forest Service have furnished the following details:

"Unusual conditions: Unusually high stream flow continued from the Humboldt River Basin in Nevada. Total run-off for the month of February at the gaging station on the Humboldt River at Palisade again established a new all time record. It was 980% of the 36 year median and 153% of the previously recorded high which occurred in February 1921. During the period Feb. 22-25 light to moderate precipitation fell on ground and snow that had been previously primed for maximum run-off conditions during heavy storms in January. These factors accompanied by temperatures above normal produced a peak discharge at Palisade of 6,470 second feet. The previous maximum flow recorded at this location was 4,300 second feet on March 5, 1921. A large part of the flood waters in the Humboldt River Basin came from northern tributaries and drainage areas at intermediate elevations. Considerable areas of agricultural land including live-stock feeding grounds and haystacks along the main stem of the Humboldt River were flooded. Highways and diversion dam structures were also damaged. Flood waters were again recorded in the Little Humboldt River Basin. However, they were not as high as those for the previous month when maximum discharge and total runoff exceeded all past records." -- U.S.G.S.

"Replying to your request for some details of our latest flood, we have had good amounts of both snow and rain through the winter. Precipitation in February, however, was not heavy. From February 13 to 22, maximum temperatures stayed in the fifties. Warm southerly winds were blowing at this time. The river started to rise on the 21st. On the 22nd and 23rd, the minimum temperatures were above freezing. The flood reached its highest point on February 25th at 1 p.m. The water is still high but confined more to the river channel. (March 8)

"For you to analyze further we are including some local weather data:

	<u>Precipitation (inches)</u>	<u>Temperatures</u>			<u>Precip.</u>
		<u>Feb.</u>	<u>Max.</u>	<u>Min.</u>	
November, 1942 :	2.77	18	51	22	0
December, 1942 :	1.71	19	52	24	0
January, 1943 :	1.68	20	53	24	0
February, 1943 :	.65	21	50	30	.06
		22	52	33	.15
		23	42	32	.01
		24	38	30	.10
		25	44	26	0
		26	47	22	0

"The reasons for the flood seem to be a combination of several factors: warm southerly winds and comparatively high temperatures starting on February 18, and light warm rains helping the snow melt rapidly. The ground was already soaked, largely from the precipitation of last November.

"The snow has now disappeared into the foothills. None of the high snow reserves seem to have been lost yet although there has been considerable settling." U.S.F.S.

Nevada Agricultural
Experiment Station
Reno, Nevada
April 1, 1943

J. E. Church, Meteorologist and
Forecaster
H. P. Boardman, Associate

